ADDITIONS TO THE BAHAMA FLORA SINCE BRITTON AND MILLSPAUGH—I.

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Additional taxa may be found in a region covered by a flora if (1) they were overlooked by the original flora writers, (2) they were described since the flora was completed, (3) they have been segregated from other taxa in the meantime, or (4) they have been introduced since the flora was completed. We compile here 81 taxa of vascular plants which are added to the Bahama flora since the publication of Britton and Millspaugh's work (1920). Some are reported for the first time; others are cited as having been gleaned from the diffuse taxonomic literature as it relates to the Bahama flora. Three previous works are of principal concern. A check-list of the plants of Bimini was published in connection with vegetational studies there (Howard, 1950). Additions to the flora of Inagua, the southernmost island in the archipelago, were noted by Howard and Dunbar (1964). Still other plants, not previously recorded by Britton and Millspaugh, were pointed out for Grand Bahama Island and Eleuthera (Lewis, 1971).

We present here, in the process of preparing a new vascular flora of the Bahama Islands, a compilation of additional vascular plants, growing without cultivation, in the Bahama Islands including the Turks and Caicos group. We include the Turks and Caicos Islands in the Bahamas, as did Britton and Millspaugh, because they all comprise the same geographical unit, despite the fact that the Turks and Caicos Islands are a separate Crown Colony from the Commonwealth of the Bahama Islands. A second paper on additional species is in preparation, the result of a recent study in the southern islands by Gillis and Proctor. Another paper will follow, summarizing nomenclatural changes from usage in Britton and Millspaugh. Together,

these papers should represent the indigenous Bahamian flora as it is now understood.

Voucher specimens for plants reported here for the first time are deposited in the herbaria of the Fairchild Tropical Garden (for specimens of Gillis and John Popenoe), of the New York Botanical Garden (for specimens of Howard), and of the Institute of Jamaica (for specimens of Proctor), with duplicates at the Arnold Arboretum.

POLYPODIACEAE

Trismeria trifoliata (L.) Diels. This species was found on the cay Lubbers Quarters off Marsh Harbour, Great Abaco (Gillis 7328A and Popenoe 131). It occurs on marl fill over an old Conocarpus swamp at the south end of the island, possibly introduced with the fill.

Pteris vittata L. This species was also found in the same marl fill as the Trismeria above (Gillis 7323 and Popenoe 132), on a road cut near Marsh Harbour (Proctor 30554), and on Grand Bahama Island near the former town site of Freeport, abandoned about 1954 (Gillis 7841).

NAJADACEAE

Najas marina L. This species is not reported by Clausen (1936) as occurring in the Bahamas. Its having been found in the Duck Pond on South Bimini, the island nearest to the Florida mainland, is however not surprising. It most likely has been brought in from Florida and may now spread by birds to other islands in the chain. This species represents a new family of flowering plants for the Bahamas (Gillis 11289).

GRAMINEAE

Cenchrus gracillimus Nash. This species is reported from Fortune Island (now known as Long Cay) in the monograph by DeLisle (1936), represented at the Missouri Botanical Garden by an old Hitchcock collection.

Eragrostis ciliaris var. laxa Kuntze. Hitchcock (1936) from Grand Turk and South Caicos.

Eragrostis excelsa Griseb. A pan-Caribbean species reported by Howard (1950) from a cemetery in Bimini.

Eragrostis urbaniana Hitchc. in Urb. Hitchcock (1936) from South Caicos, Long Cay (Caicos), and Grand Turk. This species was included in *E. ciliaris* in Britton and Millspaugh. It is represented by a recent collection (*Proctor* 9194) from Grand Turk.

Monanthochloë littoralis Engelm. Howard (1950) from Mosquito Point, North Bimini.

Panicum echinulatum Mez. Proctor 8955 from South Caicos. Hitchcock (1936) indicates that the species has been introduced to the West Indies from Paraguay and Bolivia.

Paspalum bakeri Hack. Collected on Abaco from the Eastern Shore District (Proctor 30734), this species was also reported from Inagua by Chase (1929).

Paspalum laxum Lam. Howard (1950) from old fields on Bimini.

Paspalum molle Poir. Proctor 30564 from Marsh Harbour, Abaco.

Paspalum propinquum Nash. Chase (1929) from Inagua.

Paspalum urvillei Steud. Proctor 30621 from seven to eight miles southwest of Marsh Harbour, Abaco.

Rhyncheletrum repens (Willd.) Hubb. Reported as R. roseum from Eleuthera by Lewis (1971), and found by Gillis on New Providence, Abaco, and Exuma. This weed of the southern United States, a native of Africa, has become common in the southeastern United States within the last 50 years. It surely would not have been overlooked by Britton and Millspaugh if it had been present prior to 1920.

Setaria geniculata (Lam.) Beauv. Howard (1950) from old fields on Bimini.

Sorghum halepense (L.) Pers. Proctor 30624 from Abaco, where it is extensively naturalized.

CYPERACEAE

Cyperus aristata Rottb. Both Horvat (1941) and Mc-Laughlin (1944) cite specimens of this species from the Bahamas in their revisions of certain groups of Cyperus. Cyperus globulosus Aubl. Reported (as C. globosus) by Howard (1950) from old fields on Bimini.

Eleocharis geniculata (L.) R. et S. Stimson (1967) from Bimini.

Fimbristylis annua (All.) R. et S. Kral (1971) records this species from Andros and New Providence.

Fimbristylis autumnalis (L.) R. et S. This species was cited by Kral (1971) as inhabiting the "Caribbean Islands" with no specific reference to the Bahamas. Proctor 30811 confirms its presence at Morgan's Bluff, North Andros.

PALMAE

Coccothrinax inaguensis Read. This palm was described as new by Read (1966) as a segregate from C. argentata. It was described initially from Inagua but has since been found on San Salvador, along the shore near Sandy Point (Gillis 8796 and Popenoe s.n.). Presumably it is on other southern islands in the chain as well.

Phoenix dactylifera L. Proctor has seen this escaping from cultivation in the Caicos group.

JUNCACEAE

Juncus roemerianus Scheele. Presence of this plant adds another plant family to the Bahama flora. Specimens have been collected by Peter Garrett near Red Bays, North Andros, and sent to the Fairchild Tropical Garden herbarium for identification. *Proctor* 30515 records its presence on Abaco, about 8 miles southeast of Marsh Harbour.

LILIACEAE

Smilax domingensis Willd. Proctor 9082 from North Caicos. Britton and Millspaugh state that Hitchcock's material determined as this species actually represents S. havanensis. The present assignment of the North Caicos material to this species must, therefore, be viewed with doubt, although the Proctor specimen resembles S. domingensis much more than S. havanensis.

DIOSCOREACEAE

Dioscorea bulbifera L. Found as a weed on the north side of New Providence Island in a coppice (Gillis 7520).

IRIDACEAE

Sisyrinchium exile Bicknell. Reported from Inagua by Howard and Dunbar (1964), a presumed waif. Daniel B. Ward (personal communication) suggests that this species may actually be the same as S. micranthum Cav.

PORTULACACEAE

Talinum triangulare (Jacq.) Willd. Determined by Howard from material sent in from the Exuma keys where it had some use in bush medicine. Reported as introduced and naturalized at Red Bays on North Andros (*Proctor* 30887) and at the Current on Eleuthera (*Proctor* 30952).

NYCTAGINACEAE

Bougainvillea glabra Choisy. Howard (1950) reported this species as persistent after cultivation on Bimini. It is not known to produce seed in the Bahamas, and therefore probably does not escape from cultivation.

PHYTOLACCACEAE

Phytolacca purpurascens A.Br. et Bouché. Lewis (1971) reported this species from Grand Bahama Island. Gillis 7385 is from bulldozed marl about 15 miles north of Marsh Harbour, Abaco. (The Gillis specimen determined by Jonathan Sauer whose assistance is gratefully acknowledged.)

AIZOACEAE

Sesuvium microphyllum Willd. This West Indian species was collected on Grand Turk (Proctor 8808). More recently, it has also been confirmed from a dry pond near Matthew Town, Inagua (Gillis 11707).

PAPAVERACEAE

Bocconia frutescens L. This species was first noted on Abaco by a local naturalist, Jack Patterson. It was collected and identified for inclusion in the Bahama planting at the Fairchild Tropical Garden where it has not been successful. (Gillis 7395 and Proctor 30599 from the same locality.) The occurrence of the plant is very local, extending along the road and into the pine woods for about a mile,

15 miles north of Marsh Harbour. It is obviously doing well and becoming locally abundant. So far as is known, this is its only station in the Bahamas.

CRUCIFERAE

Lepidium filicaule C.L. Hitchc. Described as new by Hitchcock (1945) from specimens determined by Britton and Millspaugh as L. virginicum, presumably depauperate ones. It is known from rocks on the east shore of Ambergris Cay in the Caicos group, and from South Caicos.

LEGUMINOSAE

Acacia tortuosa (L.) Willd. Represented by a specimen (Lewis, s.n.) at the Institute of Jamaica. It is interesting that this species should be reported as new to the Bahamas inasmuch as it has only recently been reported as new to South Florida (Alexander, 1968).

Caesalpinia divergens Urb. Howard (1950) reports this plant (as Guilandina divergens) from Bimini where it inhabits coastal thickets.

Lonchocarpus sericeus Kunth. This plant was collected by John Popenoe at South Beach, New Providence in a seemingly wild state even though it is difficult to suspect any place so close to Nassau as not having been in cultivation. Seed from this population has grown to plants of mature, bearing age at the Fairchild Tropical Garden. Specimens from this cultivated population have been determined by Mr. Mario Sousa at Harvard University. This is a West Indian species which could easily be in the Bahama flora; its having been found only once in the middle of the island chain is, however, puzzling.

Melilotus alba Desr. Naturalized in old fields seven to eight miles southwest of Marsh Harbour, Abaco (Proctor 30609).

Stylosanthes tuberculata Blake. In his revision of the genus Stylosanthes, Mohlenbrock (1957) reports this species from Southwest Landing on New Providence.

Stylosanthes calcicola Small. Mohlenbrock (ibid.) also reports this species from New Providence where it has been collected at West Bay.

RUTACEAE

Citrus aurantium L. Howard (1950) records this plant as escaped from cultivation on Bimini.

Zanthoxylum bifoliolatum Leonard. Discovered on San Salvador by John Popenoe. It has been found at the southwest corner of the island near the Sandy Point House (erroneously called "Watling's Castle") and from the dirt road that leads from near Rocky Point to Great Lake (Gillis 8811). Indigenous to Hispaniola, its occurrence on the eastern fringe of the Bahama archipelago 500 miles from Hispaniola is puzzling, but it is not the only species to have this distribution (see Croton discolor). One of the authors (GRP) prefers use of the generic name Fagara, but the other two have chosen to follow Brizicky (1962).

Spathelia bahamensis Marie-Victorin. Described by Marie-Victorin (1948) as a new species, endemic to the Bahamas. The type came from a point northwest of Settlement, Cat Island. *Proctor* 30973 confirms its occurrence on Eleuthera, south of Rock Sound and 1 mile north of the entrance to the Cotton Bay Club. This species was included within *S. vernicosa* by Britton and Millspaugh.

MELIACEAE

Cedrela odorata L. Known from the wild in a limited area on North Eleuthera near the settlements of Bluff and Upper Bogue (Jack Patterson, s.n.).

EUPHORBIACEAE

Croton discolor Willd. Gillis 8729 from a ridge on the southwest corner of San Salvador where it was growing with C. linearis which it resembles. Their differences were evident when seen together. Gillis 6205 (deposited at Michigan State University) is from near Graham's Harbour, also on San Salvador. This species was under consideration by Britton and Millspaugh, but all the material which they saw in this complex was considered to be C. linearis. These San Salvador collections confirm the presence of this species in the Bahamas.

Poinsettia cyathophora (Murr.) Kl. et Gke. This plant

may possibly be the species referred to by Britton and Millspaugh as P. heterophylla. Burch (1966) has pointed out that these two species have long been confused, but that P. cyathophora has red markings on the bracts and P. heterophylla has white markings. In any event, this ruderal plant is found on various islands, but true P. heterophylla has been collected thus far only from Bimini (Gillis 11308).

ANACARDIACEAE

Spondias purpurea L. Howard (1950) reports this species as escaped from cultivation on Bimini.

CELASTRACEAE

Maytenus phyllanthoides Benth. Jack Patterson of Abaco sent this species for determination. It appears to be a new record for the Bahamas of a shrub indigenous to the Florida Keys. It is probably more common than indicated, having been mistaken for M. buxifolia which is already known for the flora.

RHAMNACEAE

Colubrina asiatica (L.) Brongn. var. asiatica. Johnston (1971) shows Andros Island as having this species according to his dot map, but does not specifically cite specimens from the Bahamas. A recent collection (Gillis 11680) has been made from the strand on the southwest shore of Inagua. This Asiatic species has been known from the West Indies since 1860. Because of its habitat as a strand plant and because of its viability in sea water, it can be expected to appear more frequently in the Bahamas.

MALVACEAE

Cienfuegosia yucatanensis Millsp. Regarded as weedy in Cuba and Puerto Rico, Howard and Dunbar (1964) reported it first in the Bahamas from Inagua as C. heterophylla. Fryxell (1969) has recognized this to be C. yucatanensis.

Hibiscus acetosella Welwit. ex Hiern. This species was found growing without cultivation near a garbage dump on the east shore of the lake near Lake City, Abaco. It

may not persist, considering where it was found, but it nevertheless was healthy at the time of collection (1969), and appeared to be spreading (Gillis 7450). We are herein using the nomenclature of Bates (1965).

TURNERACEAE

Piriqueta caroliniana (Walt.) Urb. This species is common on some of the islands, but can become exceedingly difficult to find if a flush of flowering is past. It was abundant one day and nearly invisible the next day at the same site, once the bright yellow flowers had closed and/or fallen. Now known from Abaco (Gillis 7426) in a sandy swale south of the Marsh Harbour airport, Great Exuma (Gillis 9383) from roadsides north of Georgetown, and on the former townsite of Freeport, Grand Bahama Island (Gillis 7848). Ornduff (1970) had previously reported it as absent from the Lesser Antilles or Bahamas.

Piriqueta tomentosa Kunth. Found four miles west-northwest of Marsh Harbour, Abaco (Proctor 30434-A). In the same place, the glabrous form also was found (Proctor 30434, 30448). The latter is treated by some as P. viridis Small, but by others as only a glabrous form of P. tomentosa (Ornduff, 1970).

CACTACEAE

Harrisia undata (Pfeiff.) Britt. Proctor has collected this species on Grand Turk. His specimen fits the description of this Cuban species fairly well, with the exception that the hairs of the bud-scales are longer and more abundant, and the spines on the average are somewhat fewer than those of the Cuban plant. Britton's type specimen, however, was from cultivated material, and the process of cultivation may have produced modifications of these epidermal characters. On the other hand, the Grand Turk plant may represent a geographical race differing in these characters.

COMBRETACEAE

Terminalia muelleri Benth. This Australian native has been planted occasionally in Florida and the West Indies.

It has been found, apparently escaped from cultivation, on Eleuthera (*Proctor* 30913).

UMBELLIFERAE

Oxopolis filiformis (Walt.) Britt. From Abaco, 8 miles southwest of Marsh Harbour (Proctor 30463).

Hydrocotyle umbellata L. From Morgan's Bluff, North Andros (Proctor 30812). The old record of Dolley was disallowed by Britton and Millspaugh, and the species was thus excluded from the flora. The species, however, is now definitely confirmed from the Bahamas.

OLEACEAE

Jasminum fluminense Vell. Howard and Dunbar (1964) record this plant from Inagua. Native to Brazil, it is now weedy in the West Indies.

GENTIANACEAE

Sabatia stellaris Pursh. Reported by Lewis (1971) from Eleuthera. In his treatment of the North American species of this genus, Perry (1971) has also indicated that the species is known from Grand Bahama Island and Abaco as well.

ASCLEPIADACEAE

Cynanchum graminifolium (Griseb.) Alain. Reported by Howard (1950) as Metastelma graminifolium from Bimini.

CONVOLULACEAE

Merremia tuberosa (L.) Rendle. Gillis 7350 from Abaco, on the west shore of the lake near Lake City in a garbage dump. Gillis 7860 from near the Colonial Research Institute compound on Grand Bahama Island in the vicinity of Freeport.

Ipomoea nil (L.) Roth. Proctor 30783 from south of the San Andros airstrip on North Andros.

VERBENACEAE

Callicarpa americana L. Popenoe 129 from Abaco, 6 miles north of the Hole-in-the-Wall at the south end of the island in a pineland. Proctor 30769 from thickets between

cultivated fields south of the San Andros airstrip on North Andros.

Clerodendrum speciosissimum Van Geert. This plant is known to escape from cultivation on roadsides near the Current, Eleuthera (Lewis, 1971).

LABIATAE

Micromeria bahamensis Shinners. Shinners (1962) felt that true Micromeria brownei (as treated in Bahama Flora) did not occur in the Bahamas. He set up three varieties of M. brownei, one from Jamaica, one from Cuba and Mexico, and one from the southeastern United States and Mexico. For plants with narrower leaf blades (4-6 mm vs. 5-20 mm) and short calyx teeth, he erected this new species, endemic to the Bahamas. He added that a later worker mght choose to make this species another variety of M. brownei. For the moment, we follow Shinners's treatment.

Satureja rigida Bartr. Proctor 30456 from Abaco, eight miles southwest of Marsh Harbour.

SOLANACEAE

Solanum eleagnifolium Cav. Proctor 30960 from Hatchet Bay Farms, Eleuthera. This attractive plant may well be in other of the western islands of the archipelago, since its native range includes the southern Florida Keys.

PLANTAGINACEAE

Plantago virginica L. Howard and Dunbar (1964) report this species from the flat land beyond Conch Shell Point on Inagua. More recently, Gillis and Proctor have found it at Smith's Thatch Pond on the southern coast of Inagua.

RUBIACEAE

Hedyotis nigricans var. filifolia (Chapm.) Shinners. Gillis 7838 from a ruderal site of Grand Bahama Island. Lewis (1971) reported the species from a similar locality. Proctor 30583 from Abaco, five miles west-northwest of Marsh Harbour.

Morinda citrifolia L. This East Indies native is now

widely naturalized in the West Indies. *Proctor* 8772 came from a comparatively remote sea-beach at the eastern shore of Grand Turk and thus believed to be a natural sea-borne introduction.

Spermacoce aspera Aubl. Lewis (1971) tentatively reported this species as present at the Current, Eleuthera. The stems were upright to 0.3 m, and the corollas white. A specialist might segregate a microspecies from Lewis's specimen, but for now, it is recognized as this species.

LYTHRACEAE

Rotala ramosior (L.) Koehne. Reported by Lewis (1971) from the edge of a sandy beach at Dead Man's Reef, 9 miles east-southeast of West End, Grand Bahama Island.

ACANTHACEAE

Stenandrium carolinae Leonard et Proctor ex Leonard. See Leonard, 1960. This plant is an apparent endemic to North Caicos. It is known only from the type collection (*Proctor* 9094).

COMPOSITAE

Ageratum conyzoides L. Johnson (1971), in his treatment of the genus Ageratum, reported two subspecies of A. conyzoides from the Bahamas, both widely scattered among the islands, but neither appearing on the same islands together. Subspecies latifolium is the Ageratum latifolium of Britton and Millspaugh, but the typical subspecies conyzoides is herein reported as new to the Bahamas.

Gaillardia pulchella Foug. This common species of southern United States was picked up by Howard (1950) as an escape on Bimini.

Flaveria bidentis (L.) Kuntze. The record from Inagua by Howard and Dunbar (1964) was the first of this South American species from the West Indies but specimens from the Institute of Jamaica indicate that it has since been collected on Puerto Rico as well.

Flaveria trinervia (Spreng.) C. Mohr. Proctor 30502

from Abaco, about 10 miles south of March Harbour; Proctor 30784 from Morgan's Bluff on North Andros. More recently, Gillis and Proctor have found it on Mayaguana.

Senecio confusus Britten. Gillis 6372 from a cemetery at Calabash Bay, Andros where it escapes from cultivation. It does so as well on the south side of New Providence and probably elsewhere near habitations.

Emilia javanica (Burm.) C. B. Robinson. It is not surprising that this weed in South Florida has turned up in the Bahamas. It has been collected on New Providence (Gillis 7303), Grand Bahama (Gillis 7827), Eleuthera (Lewis 7239), and Abaco (Proctor 30630). Its lavender-flowered relative, E. sonchifolia, more rare in South Florida, was reported by Britton and Millspaugh from the Bahamas.

Solidago sempervirens L. Howard (1950) reported this species from Bimini; Lewis (1971) from Grand Bahama. A population from Lake City, Abaco (Gillis 7351) has been determined by Dr. Gary Morton to be S. sempervirens var. mexicana (L.) Fern.

Youngia japonica (L.) DC. Proctor 30759 found as a weed at Marsh Harbour, Abaco. We suspect that this plant has been introduced since the publication of Bahama Flora. We herein are following the nomenclature of Vuilleumier, 1973.

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